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08/554,424

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
08/554,424	11/06/95	VAN DER PLOEG	

EXAMINER	
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PATENT DEPARTMENT
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This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☑ Responsive to communication(s) filed on Nov. 6, 1995

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 months month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☑ Claim(s) 1-16 is/are pending in the application.
Of the above, claim(s) 1-2, 7-16 is/are withdrawn from consideration.
☐ Claim(s) _____ is/are allowed.
☑ Claim(s) 3-6 is/are rejected.
☐ Claim(s) _____ is/are objected to.
☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
☐ The specification is objected to by the Examiner.
☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.
☐ received in Application No. (Series Code/Serial Number) _____.
☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☑ Notice of Reference Cited, PTO-892
☑ Information Disclosure Statement(s), PTO-1449, Paper No(s). 6
☐ Interview Summary, PTO-413
☑ Notice of Draftperson's Patent Drawing Review, PTO-948
☐ Notice of Informal Patent Application, PTO-152

--SEE OFFICE ACTION ON THE FOLLOWING PAGES--

★ U.S. GPO: 1996-404-496/40517

1. This application is a divisional of application serial number 554,424 (filed 11\10\94). The status of this application is required to be updated on page 1 of the specification.

2. Claims 1-16 are pending.

3. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-2, drawn to a antibody to a voltage-activated cation channel, classified in class 424, subclasses 130.1, 139.1, 140.1, 143.1 and class 530, subclasses 386, 387.9, 388.1, 399.22.

II. Claims 3-6, drawn to a method of identifying compounds that modulated voltage-activated cation channel activity, classified in class 435 subclass 7.1, 7.21

III. Claims 7-16 drawn to a compound, pharmaceutical composition and agricultural composition that modulates voltage-activated cation channel and a method of treating a patient with the compound, classified in class 530, subclass 350.

4. The inventions are distinct, each from the other because of the following reasons:

Inventions I and III comprise materially different products which are distinct and unrelated substances. The inventions of

these groups have biochemically distinctive and unrelated structures and are biologically distinct and unrelated functionally. They are patentable over one another. In addition, the search for one of the groups would not be expected to reveal all the references relevant to the other, and therefore the search and examination would be unduly burdensome.

Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in materially different process of using that produce (M.P.E.P. 806.05 (h). In the instant case the product as claimed can be used in a materially different process of using the antibody of Claims 1-2 in an ELISA assay to immunopurify cation ion channels. In addition, the search for one of the groups would not be expected to reveal all the references relevant to the other, and therefore the search and examination would be unduly burdensome.

The inventions of Group II and III are unrelated. In addition, the search for one of the groups would not be expected to reveal all the references relevant to the other, and therefore the search and examination would be unduly burdensome.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated in proper. materially different processes and are practiced with materially different products. They are patentable over one another.

6. During a telephone conversation with Jack Tribble on December 9, 1996 a provisional election was made with traverse to prosecute the invention of II, claims 3-6. Affirmation of this election must be made by applicant in responding to this Office action. Claims 1-2 and 7-16 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a diligently-filed petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(h).

7. Claims 3-6 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point

out and distinctly claim the subject matter which applicant regards as the invention.

A. In claim 3, it is unclear what the metes and bounds of the term "modulate" are.

B. In claims 4 and 5, it is unclear what the metes and bounds of the terms "inhibiting" and "enhancing," "inhibition" and "enhancement" are. What criteria is used to determine if a compound inhibits, enhances, inhibits the cation channel activity. Are these terms comparable to "affect in any way or to any extent?

C. Claims 3-6 are incomplete because a method of identifying compounds that modulate voltage-activated cation channel activity in cells expressing recombinant voltage activated cation channel is claimed, but the body of the claims does not contain any positive, manipulative steps serving to identify a method of identifying the compounds. For example, a method of identifying compounds that inhibit voltage-activated cation channel activity, wherein said compound is contacted with a cell expressing a recombinant cation channel having SEQ ID No. ??? and measuring ^{22}NA influx mediated by said cation channel.

D. In claim 3, it is unclear what voltage activated cation channel is used in the method of identifying compounds that

modulate cation channel activity in cells that express recombinant voltage activated cation channel protein. Does the method encompass cells that express recombinant cation channels from rat brain, eel and Drosophila? Must the cell express the alpha and beta subunit of the voltage activated cation channel? Must the alpha and beta subunit be from the same native dimer? The claim would read more clearly if the cation channel is identified by SEQ ID NO(s). or clearly identifying which the cation channel(s) in some other way.

E. In claim 4, it is unclear what the term "cation channel ligand" means. Does this term encompass sodium, potassium, cationic proteins, toxins, and antibodies that bind the cation channel?

8. Claims 3-6 rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of identifying compounds that modulate cation channel activity by determining the ability of the test compounds to inhibit tetrotoxin induced uptake of ^{22}Na in cells expressing the cation channel and a method of identify compounds that modulate cation channel activity by determining the ability of the test compounds to protect from the toxicity of sodium channel activators (see page 35, line 28 through page 36, line 29 of specification)does

not reasonably provide enablement for a method of inhibiting or enhancing binding of cation channel ligands. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The specification does exemplify or give guidance to a method of identifying compounds that modulate cation channel activity by determining the effect of the modulation on binding of ligands to the cation channel.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

A. Claims 3 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Catterall et al.(R) (J. Biol. Chem 252:8669, 1977) in view of Isom et al.(S) (Science 256: 839, 1992).

B. Catterall et al. teach a method of identifying compounds that modulate voltage-activated cation channel activity by measuring

^{22}NA uptake in neuroblastoma cells (see page 8670 and Figures 1-4, in particular).

C. The claimed invention differs from the prior art teachings only by the use of a cells expressing a recombinant voltage-activated cation channel protein. However, Isom et al. teaches a cell coexpressing the recombinant α and β subunits of rat brain voltage activated sodium channel protein(See Figure 4, in particular).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the cells taught by Isom et al. for the cells used in the method of identifying compounds that modulate voltage-activated cation channel taught by Catterall et al. with the expectation that such a method would identify compounds that modulate voltage-activated cation channel activity.

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manger et al. (T) (Analytical Biochemistry 214:190-194, 1993) in view of Isom et al. (S)(Science 256: 839, 1992).

A. Manger et al. teach a method of identifying compounds that modulate voltage-activated cation channel activity by measuring the ability of the compounds to protect from the toxicity of

sodium channel activators in neuroblastoma cells(see pages 191-193 and Figures 2 and 3, in particular).

B. The claimed invention differs from the prior art teachings only by the use of a cells expressing a recombinant voltage-activated cation channel protein. However, Isom et al. teaches a cell coexpressing the recombinant α and β subunits of rat brain voltage activated sodium channel protein (See Figure 4, in particular).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the cells taught by Isom et al. for the cells used in the method of identifying compounds that modulate voltage-activated cation channel taught by Manger et al. with the expectation that such a method would identify compounds that modulate voltage-activated cation channel activity .

11. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoneda et al.(U) (Brain Research 563:17, 1991) in view of Isom et al. (S)(Science 256: 839, 1992).

A. Yoneda et al. teach a method of identifying compounds that modulate voltage-activated cation channel activity by measuring the inhibitory or enhancing effects of polyamines on spermidine

or NMDA binding(see abstract, pages 18-19, 21-22, 26 and Figures 4 and 5 and Table 2, in particular).

B. The claimed invention differs from the prior art teachings only by the use of a cells expressing a recombinant voltage-activated cation channel protein. However, Isom et al. teaches a cell coexpressing the recombinant α and β subunits of rat brain voltage activated sodium channel protein(See Figure 4, in particular).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the cells taught by Isom et al. for the cells used in the method of identifying compounds that modulate voltage-activated cation channel activity taught by Yoneda et al. with the expectation that such a method would identify compounds that modulate voltage-activated cation channel activity.

12. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martha Lubet in Art Unit 1816 whose telephone number is (703) 305-7148.

The examiner can normally be reached on Monday through Friday from 8:15 AM to 4:45 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan, can be reached at (703) 305-3973. The FAX number for this group is (703) 305-7939. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Martha T. Lubet

January 13, 1997

TC

THOMAS M. CUNNINGHAM
PRIMARY EXAMINER
GROUP 1800